DR. MICHAEL Y. LIANG

218 CREEDON CIRCLE, ALAMEDA, CA 94502, USA. TEL/FAX: (510) 769-8394
Email: ml_sps2@yahoo.com; ml_amecx@yahoo.com

As to your rejection to my claim 1 under 35 U.S.C. 102(b) as being anticipated by Hirai et al (U.S.P.N. 4990311), I have objections to your action because you were comparing apple and tomato and over interpreted Hirai's method.

First, Hirai and I use different theories to reach different goals. Hirai's UV ray is not my UV ray.

My invention use radiation theory to kill microorganisms in air directly. It employs only one kind of UV ray at about 253.7nm wavelength (my application, summary of invention, paragraph [0013]) known as the best UV ray for killing microorganisms by irradiation in all UV rays to kill all microorganisms.

However, Hiral's method uses ozone theory to deodorize air. It employs UV ray at about 185 nm wavelength (Hiral's patent, Background of the Invention, line 5 and Description of the Preferred Embodiments, column 3, line 14) known as the best UV ray for producing ozone to deodorize air. Ozone is good for deodorization, but it has weaker killing power to microorganisms than 253.7nm UV radiation.

You may argue that, the second UV light (Hiral's patent, figure 5:32), in Hiral's method, with wavelength at about 254nm also has the function to kill microorganisms by radiation. However, the second UV light has limitation to its intensity because it was only designed to reenergized catalyst filter and includes means to control it (Hiral's patent, Background of the Invention, line 5 and Description of the Preferred Embodiments, column 3, line 18). Thus it has even weaker irradiating killing power to microorganisms than normal 253.7nm UV light applications like other patents cited in my application.

Second, the circuitous sterilizing chamber in my invention is interiorly of a different shape to the one in Hiral's method.

Hiral's method uses rectangle chamber (which should not be considered as circuitous chamber, Hiral's patent, figure 5:73) to contain the fluent material. When the fluent material goes through the chamber 73, each portion of the said material will actually travels different distance in the chamber before discharging through a connecting duct (Hiral's patent, figure 5:85), where no any UV light at all, into second rectangle chamber (figure 5:74) for decomposing ozone. With Hiral's method, only a portion of the said material

DR. MICHAEL Y. LIANG

218 CREEDON CIRCLE, ALAMEDA, CA 94502, USA. TEL/FAX: (510) 769-8394
Email: ml_sps2@yahoo.com; ml_amecx@yahoo.com

like you described "flowing in the upper part of diffuser plate 41 in chamber 71 then the gas flows downward through connecting duct 81 ..." The other will flow in the lower part of diffuser plate 41 in chamber 71 then toward connecting duct 81... So, each portion of the said material does not travel equally in time and in distance, which results in the uneven exposure to the UV radiation. Then, the effect of sterilization can not be guaranteed.

My invention employs chamber(s) interiorly partitioned into continually circuitous channel(s) by interior wall (my application figure 1 to 5:9) to contain the fluent material. The circuitous channel(s) in my method not only guarantee all fluent material will synchronously go through the sterilizing chamber with similar length, but also guarantees all fluent material equally exposed to designated amount of UV radiation.

Third, in my invention, the interior circuitous channel(s) of the chamber offers a flexible infrastructure for installing designated number of UV lamps. The length of the channel(s) and/or the number of roundabouts in the chamber can be changed to accomplish the sterilization target. In the preferred embodiment of my invention (figure 2), ninety-eight UV lamps are employed offering at least 1500W 253.7nm UV power to sterilizing air. However, Hiral's method does not have such infrastructure and only employs one 254nm UV lamp.

Fourth, in my application, "in large volume" means 300 cfm to 30000 cfm. The average travel time for the fluent material within the chamber is less then two seconds. But with Hiral's method, it only deal with very little amount of fluent material (0.07cfm) [2 liters/min, Hiral's patent, column 4, Experimental Examples, line 23]. According to common practice, if using ozone to sterilizing air, it needs ozone concentration in the air higher than 20mg/cbm and lasts at least thirty minute to reach 90% killing rate. So, it is not true to interpret that Hiral's method can sterilize air in large volume.

Fifth, in my invention, since non-ozone germicidal lamps are used (my application, Detailed Description, paragraph [0047], line 9) as the source of 253.7 nm UV ray, there should be no ozone generated theoretically. The comprised catalytic ozone filter in the outlet filter is just for the trace amount of ozone generated by application using some low-end lamps. It does not play an important role in my invention and it is usually omitted in actual applications.

DR. MICHAEL Y. LIANG

218 CREEDON CIRCLE, ALAMEDA, CA 94502, USA. TEL/FAX: (510) 769-8394
Email: ml_sps2@yahoo.com; ml_amecx@yahoo.com

On the opposite, in Hiral's method, the catalytic filter is the key component as there is plenty of ozone generated on purpose in the first chamber.

In conclusion, the differences in theory, wavelength of UV ray, interior shape of the chamber, UV intenseness, air volume deal with and the purpose of the inventions make my invention distinct from Hiral's method. In all these crucial fields, my invention is totally different from Hiral's method. There would not be any scientific evidence to show Hiral's method can be used to sterilizing air in large volume and as efficient as my invention. Thus, Hiral's patent does not have any inherent feature which covers my invention not be recognized at the time of his invention. And MPEP 2112, II should not be applied.

I believe that the above corrections will make my idea more clear and my explanation will help you understand the difference between my invention and U.S.P.N. 4990311.

If there is any thing I have to do, please let me know.

Yours truly,

Michael Liang

(A copy of this will be sent to you by mail from HK.)

PAGE 4/4 * RCVD AT 8/1/2007 1:39:44 AM [Eastern Daylight Time] * SVR:USPTO-EFXRF-3/11 * DNIS:2738300 * CSID: * DURATION (mm-ss):02-40